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Jensen, Henrik Elvang

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The diagnosis of pulmonary mycoses: histomorphological criteria contra immunohistochemical reactivity

H.E. Jensen

(Frederiksberg, DK)

Objectives: As a consequence of even suspecting the presence of pulmonary mycoses clinically, cases are often not diagnosed until histopathology is applied. Distinctive morphological details may provide a tentative identification, but the appearance of fungi in tissue sections is affected by steric orientation and age of the fungus. Moreover, sharing of morphological similarities and the presence of sparse and/or atypical fungal elements will hamper a clear-cut diagnosis. In the present study, the histomorphological diagnosis in 55 cases of pulmonary mycoses was compared with the diagnosis obtained immunohistochemically.

Methods: In order to obtain a second opinion, a total of 55 pulmonary mycosis cases were received from 1996 to 2009. The suspected diagnoses were as follows: aspergillosis: 29; aspergillosis and candidosis: 6; zygomycosis: 8; and unidentified: 12. All cases were immunohistochemically screened with three commercial available antibodies from AbD Serotec reacting specifically with agents of aspergillosis (MCA 2576), candidosis (1750-5557), and zygomycosis (MCA 2577). Difficulties for obtaining a correct histomorphological diagnosis were evaluated, too.

Results: A correct diagnosis of aspergillosis and zygomycosis was upheld in 76% and 88%, respectively. The suspicion of a dual infection of aspergillosis and candidosis was only confirmed in 1 case, whereas aspergillosis and candidosis alone was diagnosed in 4 and 1 cases, respectively. Aspergillosis was confused with zygomycosis in 4 cases, and aspergillosis and candidosis in 2 cases. Only 1 case of zygomycosis was misdiagnosed as aspergillosis. Unidentified cases were identified as aspergillosis (n = 4). Zygomycosis (n = 1), aspergillosis and candidosis (n = 1), candidosis (n = 2). Four cases remained unidentified together with one suspected aspergillosis case, which failed to react immunohistochemically. Diagnostic histomorphological criteria were especially challenged in chronic lesions which contained massive necrosis, and when only few fungal elements were present.

Conclusion: The application of immunohistochemistry changes the histomorphological diagnoses in 28% of the cases. Moreover, the technique diagnosed 67% of 12 unidentified causes of pulmonary mycoses. Therefore, the application of the present series of antibodies in immunohistochemical techniques will be advantageous for achieving a more complete identification of fungi, which is mandatory for an optimal treatment strategy.